Help Center

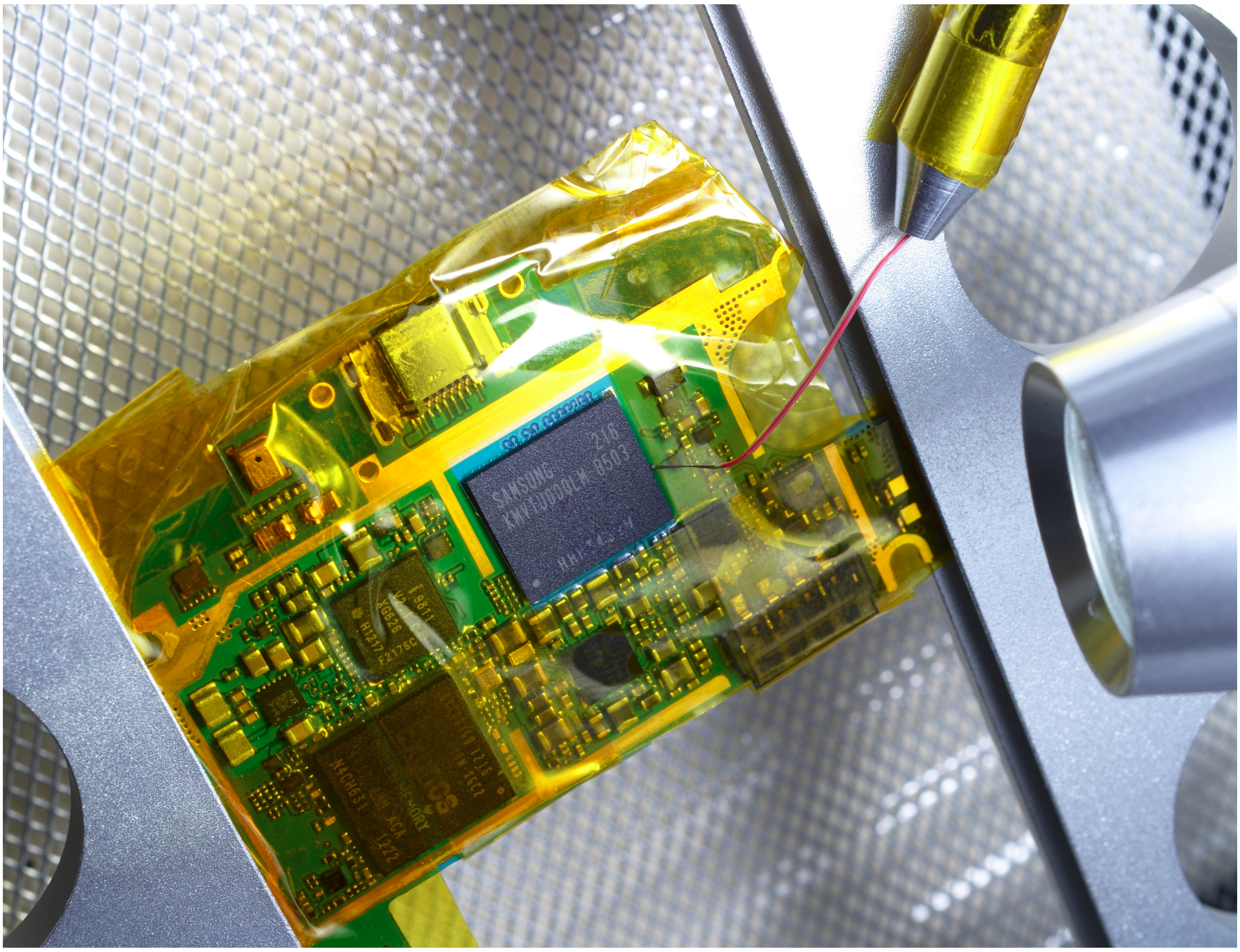
Why should you throw away your hot air station for unsoldering

There’s one long-lasting debate about memory chip unsoldering – what’s the best technique?

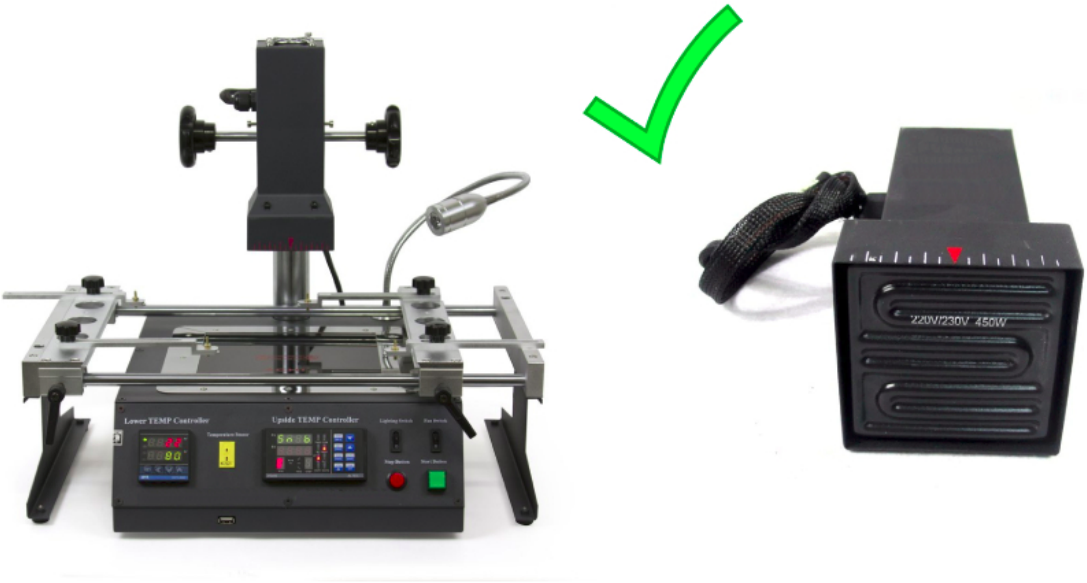
Our users constantly ask us about using a hot air station to unsolder memory chips. We'd like to explain in 'simple terms' why using a tool like this can corrupt data (not always the chip itself!) and what alternative techniques can replace it.

From what we see among the engineers, hot air stations that are being used usually have poor quality (they are cheap though!). It is a scientific fact, that this tool works in such a way that it does heat the air, and then air transfers the heat to the solid body of the memory chip. It is known as heating through “convection”. The air is a naturally very bad heat conductor! When you set a temperature on such a station and blow the air on the chip - it is often difficult to know the actual hot air temperature that reaches the chip and even harder to control the real temperature of the memory chip itself.

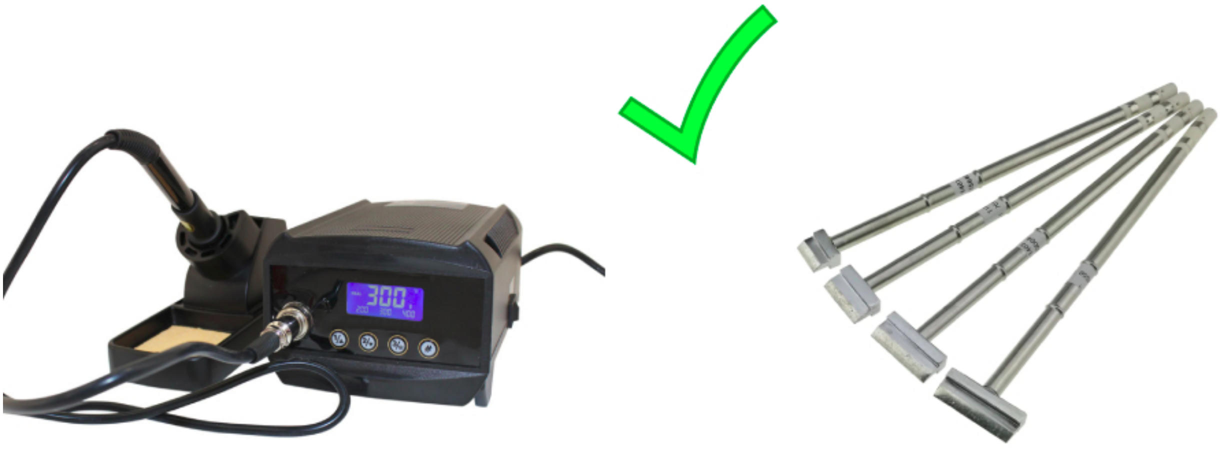
The vast majority of readers of this article do not utilize external temperature sensors, right? This is a very inefficient and uncontrollable technique since there is a huge and random heat loss happening, depending on airflow level and the distance (about 100°C of heat is lost for several centimeters of distance). In this situation, it is very easy to make a mistake and overheat the chip, which can be critical for the data, in particular for TLC chips.



We recommend using tools that have more predictable physical characteristics and dramatically better ways of heat transfer.
BGA chips – the ideal choice is a semi-automatic IR rework station with heaters from the top and bottom. The InfraRed emission works like true magic for soldering! The denser the body is, the more energy it absorbs. This means the heat/energy transfer to metal pads through silicon is very efficient! Avoid getting those stations with an IR lamp that has a visible spectrum of light. Go for the option with ceramic heaters that have an invisible IR spectrum and an external temperature sensor that you mount close to the chip. They normally have automatic temperature control with preprogrammed patterns and a delicate heating rate of 3 Celsius degrees per sec or less. The key to success is slow heating for several minutes, it helps to prevent the thermal shock of the chip and keeps your bits safe!



TSOP chips – you can never go wrong with an old good soldering iron, which is way better and safer than hot air. Why overheat the whole body of the chip, when you only need to heat up the pins? We recommend getting something modern with easily replaceable soldering tips, such as T12 type or others, with shovel-like soldering tip options. Automatic temperature sensing and feedback are a perfect feature of some soldering iron stations!



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